December, 2003 Report of the Tevatron BPM Upgrade
wbs item 1.3.4.6.4
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Project Manager's Summary:

In December the project was primarily concerned with the core electronics choice and the review of that choice and direction on December 16, 2003. The preparations for the review and indeed for making the choice were quite time-consuming and difficult. The review charge, the talks, and the closeout can all be found on the web pages of the project (http://wwwserver2.fnal.gov/reviews/tech_choice/) or the web pages of the Run 2 Upgrade project: (http://www-bdnew.fnal.gov/run2upgrade/reviews/Tev_BPM_TechReview/index.html). The "modified Echotek" solution was chosen for the project.

Work continued on the analysis and collecting of data from the Tevatron. This was accomplished with the damper board, a Recycler-style Echotek board, a high-speed oscilloscope, and the DSR board. Work proceeded in parallel on all of these fronts with the goals of establishing resolution capabilities of the Echotek system and how well the antiproton signal can be separated from the large proton signal.

In January the project will continue to execute the project. Work will continue on establishing the resolution of the Echotek system, the antiproton/proton separation prospect, establishing teststands in the Feynman Computing Center in addition to the teststands that exist in Accelerator Division, software specification and design, especially for the front-end, among other tasks. We will participate in the Temple Review of the Run 2 Upgrade project on January 20-22. We will work on the preparation of the purchase order of the modified Echotek boards. We will work with the Run 2 Upgrade project to establish the Tevatron BPM Upgrade project as an AIP.

Resources Used in December, 2003:

The total number of FTE-months devoted to the project in calendar December 2003 in the Computing Division was reported to be 4.4 FTE-months, and 13 people contributed. Estimated effort expended in the Accelerator Division was 1.4 FTE-months, and 5 people, in December, 2003. The total effort from both Divisions was 5.8 FTE-months. The following table gives the estimated or reported effort for both divisions since August of 2003.

Month	AD Effort	CD Effort	Total Effort
August, 2003	1.2	2.3	3.5
September, 2003	1.4	4.1	5.5
October, 2003	5.4	6.0	11.4
November, 2003	1.6	5.0	6.6
December, 2003	1.4	4.4	5.8

No purchase requisitions were placed in December.

All earlier purchases are listed here:

PO 554435	$1,100	Bandpass filters
PO 553812	$4,330	Connectors
PO 553679	$0	Connectors (order cancelled)
PO 545187	$21,099	Electrician Services

BLM prototype parts:

Pro-Card	$295	PCI2PMC Adapter
Pro-Card	$585	PCM-DIO

Tunnel/Cabling:

Pro-Card	$403	BNC Plug 39F1030
Pro-Card	$1590	Connectors

Total	**$28,031**	

Milestones:

There was one milestone in December. The review of the electronics choice was held on December 16, 2003.

Meetings held, Reports Given:

Meetings were held in December on the following dates:

December 3, 10, 17, 29 -- Project meetings

December 1, 4, 8, 11, 12, – Hardware, preparation for the review meetings

December 16 – Technology Choice Review

December 18 – Discussion of data buffers

December 19 – Talk at Tevatron Department Meeting

Documents:

The following documents were written and added to the Accelerator Division Document Database in December:

Stephen Wolbers, "Tevatron BPM Upgrade Project Review Summary", Tevatron Department Meeting, December 19, 2003, Doc 950.

Bob Webber, "Summary: Status, Motivations and Directions", Talk given at the December 16, 2003 review, Doc 948.

Vince Pavlicek, "BPM Hardware", Talk given at the December 16, 2003 review, Doc 947.

Robert Kutschke, "Seeing Antiprotons with the Damper Board", Talk given at the December 16, 2003 review, Doc 946.

Jim Steimel, "Key Specifications for Tevatron BPM Hardware Architecture Choices", Talk given at the December 16, 2003 review, Doc 945.

Michael Martens, "Tevatron BPM Requirements", Talk given at the December 16, 2003 review, Doc 944.

Stephen Wolbers, "Tevatron BPM Upgrade Project Manager Overview", Talk given at the December 16, 2003 review, Doc 943.

Stephen Wolbers, "Monthly Report of the Tevatron BPM Upgrade Project", December 10, 2003.

Subproject Leader Reports:

Specifications: Jim Steimel

For the first half of the month, most of the specifications effort went toward organizing current information for the internal review. After the review, the effort focused on the pbar/proton deconvolution applicability. A model of the BPM was created with a microwave simulator and produced interesting results. The next months effort will be focused on refining the model and taking real data from a BPM test stand and hopefully, beam data.

Electronics: Vince Pavlicek

The electronics subproject group monitored the data taking tests at BPM A15. Mark Bowden worked with Echotek to get a quote for a modified version of the Recycler A2D module and to arrange a site visit for Echotek reps. Most of the rest of the month was applied to hardware choice evaluations and preparation for the project review.

The idea of using the prototype BLM data acquisition hardware to readout a Tevatron BLM was discussed and the many risks to accelerator operations make this a low priority task at this time.

In January, the electronics subproject plans to focus on defining the timing and calibration hardware needed for the new system.

Front-end/DAQ software: Margaret Votava

December was a short month because of holidays and vacations. We spent time in flushing out the details of the buffer requirements. Luciano Piccoli has prepared a small unit test environment for the vxworks code - culite (based on cppunitelite). Dehong Zhang has focused on understanding the firmware and software for DSR teststand under tutelage of Brian Chase.

Online software: Brian Hendricks

This month was spent studying into some of the BLM specific applications that will need to be supported. This resulted in the discovery that a new group of BLM devices will need to be created along with an accompanying data structure definition. Also, efforts began to develop new database tables for storing BLM data. New library support was identified that will be needed to support these devices and their files.

Offline software: Rob Kutschke

For the first half of December my effort went into analysis of the damper board data and preparations for presenting this work at the technology choice review. We have demonstrated qualitatively that we can see the anti-protons in the presence of protons but there remain unsolved problems with the calibration. Work on this front will continue in January after people have returned from vacation.